Dart Aerospace Ltd.

Date: Friday, 26/09/2008 10:59:00 AM
User: Julie Lecocq

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	**Drawing Name**	: 212/205 HIGH FED X-TUBE ASSEMBLY
Job Number	: 42305		
Estimate Number	: 13216		
P.O. Number	:	**Part Number**	: D212664101TRN
This Issue	: 26/09/2008 **S.O. No.** :	**Drawing Number**	: D212-664-141 REV C
Prsht Rev.	: NC	**Project Number**	: N/A
First Issue	: / / **Type** : CROSSTUBES	**Drawing Revision**	: C
Previous Run	: 42128	**Material**	:
Written By	:	**Due Date**	: 03/10/2008 **Qty:** 1 **Um:** Each
Checked & Approved By	: JD 08.9.26		
Comment	: Est Rev:A 08-03-06 new issue DD verified by:ec Est Rev B 08.04.02 removed Polish EC verified by: DD		

Additional Product

Job Number:

Seq. #:	Machine Or Operation:	Description :
1.0	D6005128	Crosstube Material

Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)
Pick:
Qty Part number Description Batch
1 D6005-128 Crosstube B34775
Check OD = 2.750"; ID = 2.000"

a-m 08.09.29

Seq. #:	Machine Or Operation:	Description :
2.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE

Comment: MORI SEIKI CNC LATHE LARGE

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA113

2-Turn first side as per Folio FA113

3-File down transition lines smooth.

a-m 08.09.29

Seq. #:	Machine Or Operation:	Description :
3.0	QC1	INSPECT ALL DIM TO DIM SHEET

Comment: INSPECT ALL DIM TO DIM SHEET

a-m 08.09.29

Seq. #:	Machine Or Operation:	Description :
4.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE

Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA113

2-File down transition lines smooth.

3-Remove sand and plugs

am 08.09.29

Form: rprocess

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: ____________________ **PAR #:** _______ **Fault Category:** ________________ **NCR:** Yes No **DQA:** _____ **Date:** _________

Resolution: ____________________ **Disposition:** ____________________ **QA: N/C Closed:** _________ **Date:** _________

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 26/09/2008 10:59:00 AM
User: Julie Lecocq

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 212/205 HIGH FED X-TUBE ASSEMBLY

Job Number: 42305

Part Number: D212664101TRN

Job Number:

Seq. #:	Machine Or Operation:	Description :
5.0	QC1	INSPECT ALL DIM TO DIM SHEET
	Comment: INSPECT ALL DIM TO DIM SHEET	Q.M 08.09.29
6.0	QC8	SECOND CHECK AWM 8-9-30
	Comment: SECOND CHECK	
7.0	HAND FINISHING1	HAND FINISHING RESOURCE #1 AWM 8-9-30
	Comment: HAND FINISHING RESOURCE #1 Chemical Conversion Coat as per QSI 005 4.1	
8.0	QC3	INSPECT POWDER COAT/CHEMICAL CONVERSION
	Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION	M 8-9-30
9.0	PACKAGING 1	PACKAGING RESOURCE #1
	Comment: PACKAGING RESOURCE #1 Identify and Stock in kanban rack Location: X-TUBE CELL	AWM 8-10-01
10.0	QC21	FINAL INSPECTION/W/O RELEASE 08/10/02
	Comment: FINAL INSPECTION/W/O RELEASE	

MF 08-10-01

Job Completion

Form: rprocess

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: ____________________ **PAR #:** _______ **Fault Category:** __________________ **NCR:** Yes No **DQA:** _____ **Date:** _________

Resolution: ____________________ **Disposition:** ____________________ **QA: N/C Closed:** __________ **Date:** _________

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	42305
Description: Crosstube Assembly (205/212/412 High Fwd)	**Part Number:**	**D212-664-141**
Inspection Dwg: D212-664-141 **Rev:** C		**Page 1 of 1**

FIRST ARTICLE INSPECTION CHECKLIST

[X] **First Article** [ ] **Prototype**

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.200	+/-0.010	0.200	✓			
	R0.063	+/-0.010	R0.068	✓			
	2.740	+0.005/-0.000	2.740	✓			
	5.097	+/-0.030	5.097	✓			
	2.304	+0.005/-0.000	2.304	✓			
	2.340	+0.005/-0.000	2.340	✓			
	2.398	+0.005/-0.000	2.400	✓			
	2.448	+0.005/-0.000	2.448	✓			
	2.498	+0.005/-0.000	2.500	✓			
	2.549	+0.005/-0.000	2.551	✓			
	2.599	+0.005/-0.000	2.601	✓			
	2.671	+0.005/-0.000	2.673	✓			
	2.701	+0.005/-0.000	2.701	✓			
SIDE B	0.200	+/-0.010	0.200	✓			
	R0.063	+/-0.010	R0.063	✓			
	2.740	+0.005/-0.000	2.740	✓			
	5.097	+/-0.030	5.097	✓			
	2.304	+0.005/-0.000	2.304	✓			
	2.340	+0.005/-0.000	2.340	✓			
	2.398	+0.005/-0.000	2.400	✓			
	2.448	+0.005/-0.000	2.450	✓			
	2.498	+0.005/-0.000	2.500	✓			
	2.549	+0.005/-0.000	2.551	✓			
	2.599	+0.005/-0.000	2.601	✓			
	2.671	+0.005/-0.000	2.673	✓			
	2.701	+0.005/-0.000	2.701	✓			
	126.51	+/-0.020	126.510	✓			

Measured by:	a.m	Audited by:	AWM	Prototype Approval:	N/A
Date:	08.09.29	Date:	8-9-30	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	05.04.27	New Issue (P/O D412-664-101)	KJ/JLM	
B	06.03.15	Tolerance revised for 5.097 per Dwg Rev update	KJ/JLM	
C	07.05.28	Dwg Rev updated	KJ/JLM	

DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
CHECKED	APPROVED	DRAWING NO. D212-664-141 REV. C SHEET 1 OF 3
DATE 07.03.08		TITLE XTUBE ASS'Y (205/212/412 HI FWD) SCALE NTS

DART

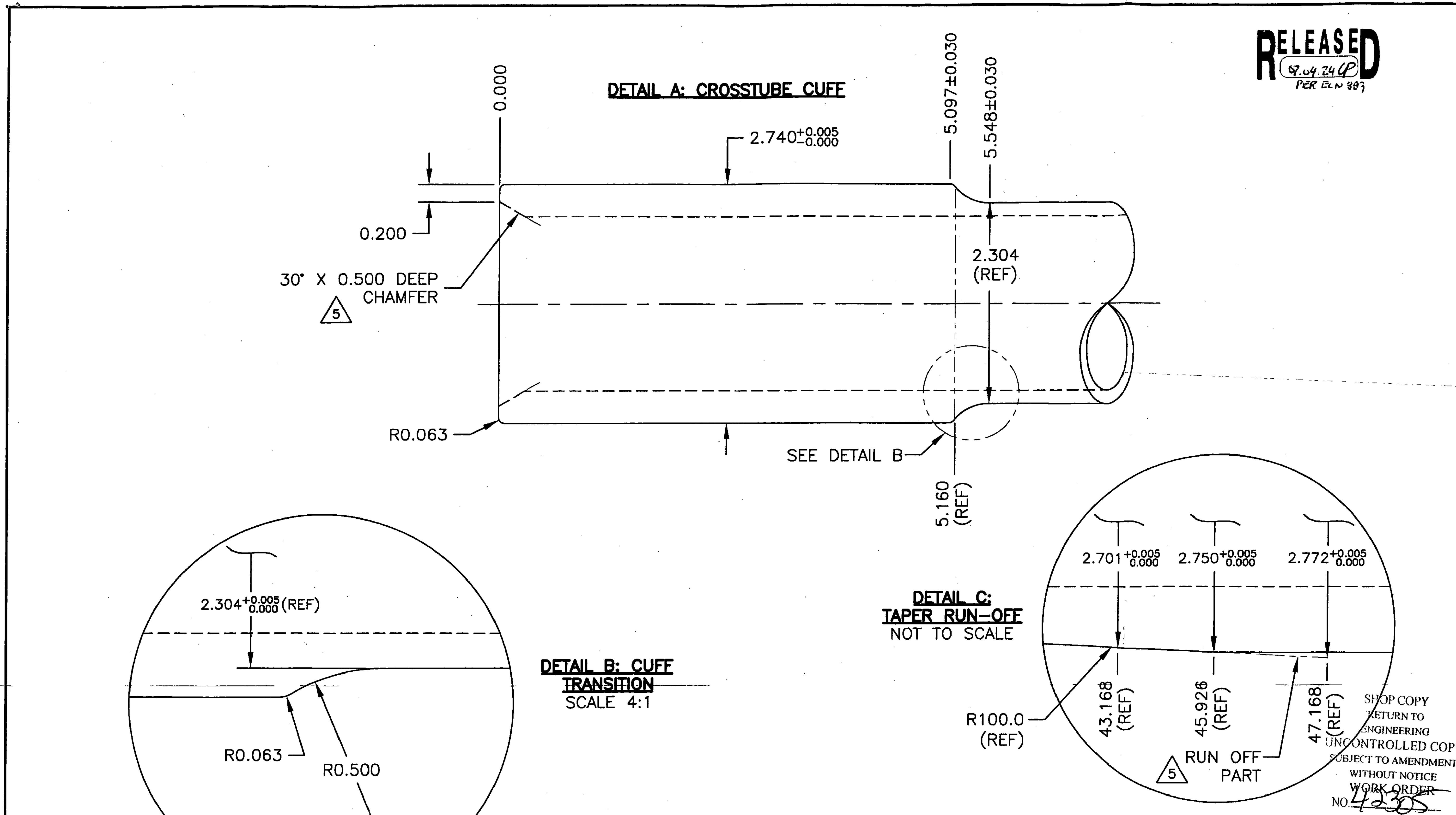
REV	DATE	DESCRIPTION
A	00.12.12	NEW ISSUE
B	05.02.04	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES
C	07.03.08	REMOVE -851 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS

RELEASED 07.04.24

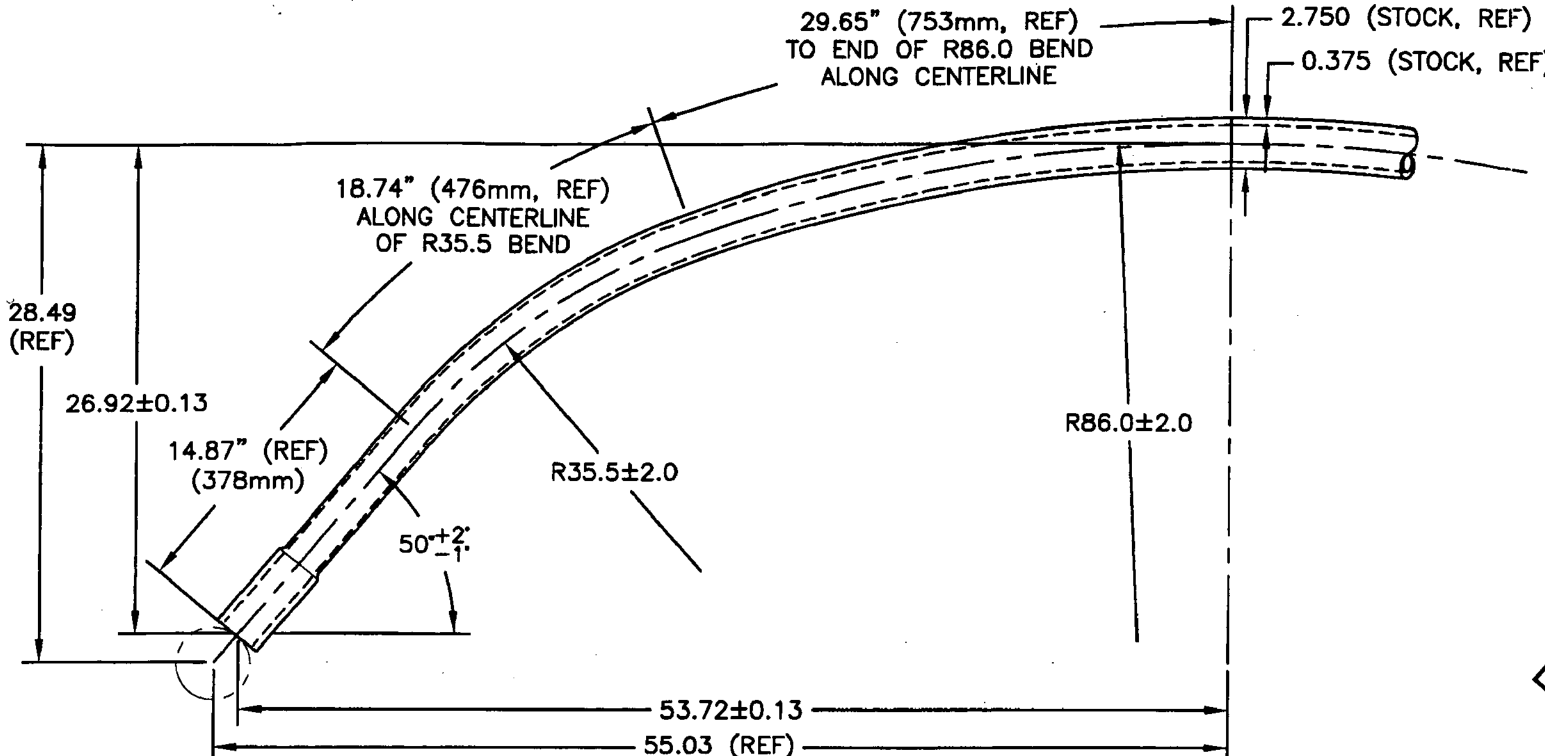
Qty	Part Number	Description
X	D212-664-141	CROSSTUBE ASSEMBLY (205/212/412 HIGH FWD)
1	D6005-128	CROSSTUBE
2	D2893-1	SUPPORT
4	D3595-063-450	RUBBER CUSHION
4	MS21920-25	CLAMP (OR MS21920-26)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

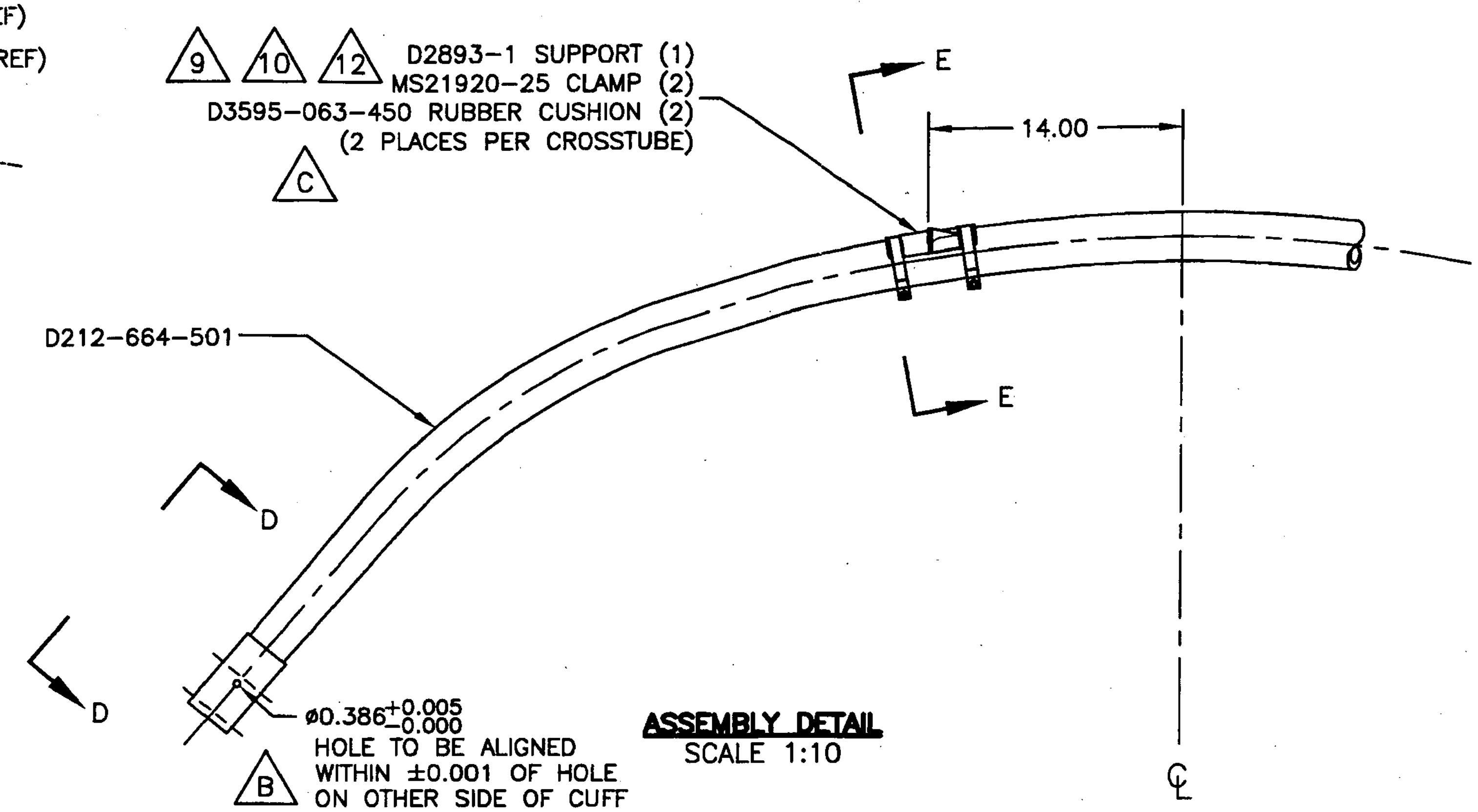
1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
2) MATERIAL: MANUFACTURED FROM D6005-128
   FINISHED LENGTH = 126.51±0.020
3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
   PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
   PAINT OUTSIDE PER DART QSI 005 4.2
4) PART IS SYMMETRIC ABOUT CENTERLINE.
5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
6) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
9) INSTALL D2893-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
10) INSTALL MS21920-25 CLAMPS (OR -26) WITH D3595-063-450 RUBBER CUSHIONS TO SECURE THE D2893-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT
11) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
12) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



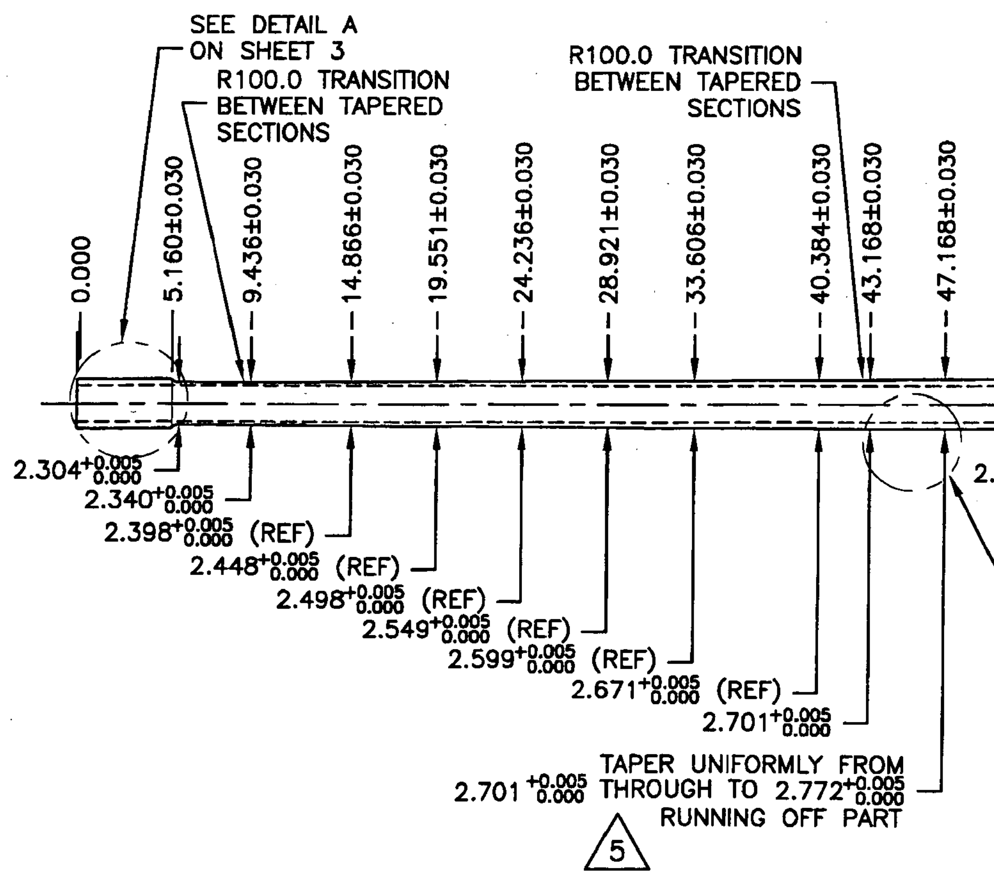
DESIGN	DRAWN BY	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA	
PH	PH		
CHECKED	APPROVED	DRAWING NO. D212-664-141	REV. C SHEET 3 OF 3
DATE 07.03.08		TITLE XTUBE ASS'Y (205/212/412 HI FWD)	SCALE 1:1



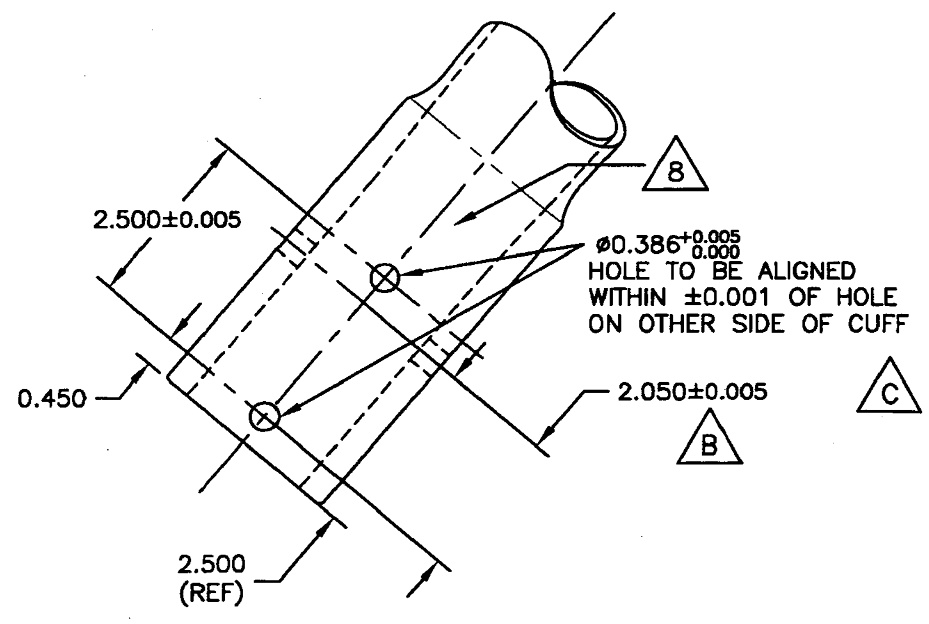
BENDING DETAIL 6
SCALE 1:10



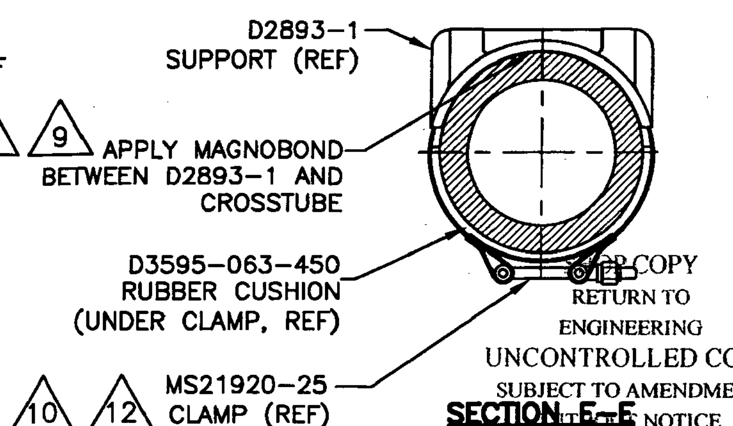
ASSEMBLY DETAIL
SCALE 1:10



TURNING DETAIL
SCALE 1:10



VIEW D–D: CUFF DETAIL
SCALE 2:5



SECTION E–E
SCALE 2:5

DESIGN	DRAWN BY	DART	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
PH	PH		
CHECKED	APPROVED	DRAWING NO. D212-664-141	REV. C SHEET 2 OF 3
DATE 07.03.08		TITLE XTUBE ASS'Y (205/212/412 HI FWD)	SCALE 1:10